Site Investigation

Final
Site-Specific Field Sampling Plan Attachment for the Fill Area Northwest of Reilly Airfield Parcel 229(7)

Fort McClellan
Calhoun County, Alabama

Prepared for:

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Task Order CK005
Contract No. DACA21-96-D-0018
IT Project No. 774645

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Revision 1

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List of Acronyms

ADEM	Alabama Department of Environmental Management
CESAS	Corps of Engineers South Atlantic Savannah
CLP	Contract Laboratory Program
CSEM	conceptual site exposure model
CWA	chemical warfare agent
DOE	(U.S. Army) Directorate of Environment
DQO	data quality objective
EBS	environmental baseline survey
EM	electromagnetic
EPA	U.S. Environmental Protection Agency
EPIC	Environmental Photographic Interpretation Center
ESE	Environmental Science and Engineering, Inc.
FTMC	Fort McClellan
GPR	ground penetrating radar
GPS	global positioning system
IDW	investigation-derived waste
IT	IT Corporation
PID	photoionization detector
PPE	personal protective equipment
PSSC	potential site-specific chemical(s)
QA/QC	quality assurance/quality control
QAP	installation-wide quality assurance plan
SAP	sampling and analysis plan
SHP	installation-wide safety and health plan
SI	site investigation
SSHP	site-specific safety and health plan
TAL	target analyte list
TPH	total petroleum hydrocarbon
USACE	U.S. Army Corps of Engineers
VOC	volatile organic compound
WP	installation-wide work plan

Executive Summary

In accordance with Contract No. DACA21-96-D-0018, Task Order CK005, IT Corporation (IT) will conduct a site investigation at the Fill Area Northwest of Reilly Airfield, Parcel 229(7), to determine the presence or absence of potential site-specific chemicals (PSSC) at this site. The objective of this site-specific field sampling plan (SFSP) is to provide technical guidance for sampling activities at the Fill Area Northwest of Reilly Airfield, Parcel 229(7).

Parcel 229(7) is a densely wooded area (approximately 5 acres) northwest of Reilly Airfield. Information regarding operations at this parcel is not available. Interviews were conducted with both retired and current FTMC personnel regarding past practices or operations at this site. However, IT was unable to determine dates of operations and whether disposal activities occurred at this site. It is not known what, if any, disposal activities may have occurred at this location. A geophysical survey will be performed prior to sampling activities to delineate the boundaries of the fill area. IT will collect six surface soil samples, seven subsurface soil samples, five groundwater samples, three sediment samples, three surface water samples, and two depositional soil samples.

Since this area contains potential disposal areas, and information is not available regarding previous operations at this parcel, IT will collect and analyze samples for a range of parameters which include volatile organic compounds (VOC), semivolatile organic compounds (SVOC), metals, chlorinated pesticides and herbicides, organophosphorus pesticides, explosives, and polychlorinated biphenyls. Results from these analyses will be compared with site-specific screening levels specified in the installation-wide work plan (WP), and regulatory agency guidelines.

This SFSP attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for Reilly Airfield West, Parcel 229(7) will be used in conjunction with the site-specific safety and health plan (SSHP), and the installation-wide work plan (IT, 1998b) and the SAP. The SAP includes the installation-wide safety and health plan, waste management plan, and quality assurance plan. Site-specific hazard analyses are included in the SSHP.

1.0 Project Description

1.1 Introduction

The U.S. Army is conducting studies for the environmental impact of suspected contaminants at Fort McClellan (FTMC) in Calhoun County, Alabama, under the management of the U.S. Army Corps of Engineers (USACE)-Mobile District. The USACE has contracted IT Corporation (IT) to provide environmental services for the site investigation (SI) of the Fill Area Northwest of Reilly Airfield, Parcel 229(7) under Task Order CK005, Contract No. DACA21-96-D-0018.

This site-specific field sampling plan (SFSP) attachment to the installation-wide sampling and analysis plan (SAP) (IT, 1998a) for FTMC has been prepared to provide technical guidance for sample collection and analysis at the Fill Area Northwest of Reilly Airfield, Parcel 229(7) (Figure 1-1). IT will collect surface, subsurface, groundwater, surface water, sediment, and depositional soil samples at this site as part of the SI to determine the presence of potential site-specific chemicals (PSSC) of concern in various site media. The SFSP will be used in conjunction with the site-specific safety and health plan (SSHP) developed for the Fill Area Northwest of Reilly Airfield, Parcel 229(7) site, and the installation-wide work plan (WP) (IT, 1998b), the waste management plan (WMP), and the SAP. The SAP includes the installation-wide safety and health plan (SHP) and quality assurance plan (QAP).

FTMC is located in Calhoun County in northeast Alabama (Figure 1-1). FTMC is comprised of three sections, the Main Post, Pelham Range, and Choccolocco Corridor. The area to be addressed during this SI is located on the northern portion of the Main Post. During the environmental baseline survey (EBS) (Environmental Sciences and Engineering, Inc. [ESE], 1998) this site was classified as Category 7: areas not previously evaluated or that require additional investigation. Figure 1-2 shows the site location for Parcel 229(7).

1.2 Site Description

Parcel 229(7) is located on the northern portion of Main Post at the western end of Reilly Air - field. The parcel contains a potential disposal area identified in the Environmental Photographic Interpretation Center (EPIC) report from the aerial photo composite dated 1954 (EPA, 1990). Linear north-south trending mounds are visible at the northern margin of a cleared area (ground scar). Mounded material may be present in the cleared area. It is unclear precisely which feature or features were interpreted by EPIC as being "Fill"; therefore Parcel 229(7) encompasses the entire cleared area, including the linear mound. The size of the parcel identified on the CERFA

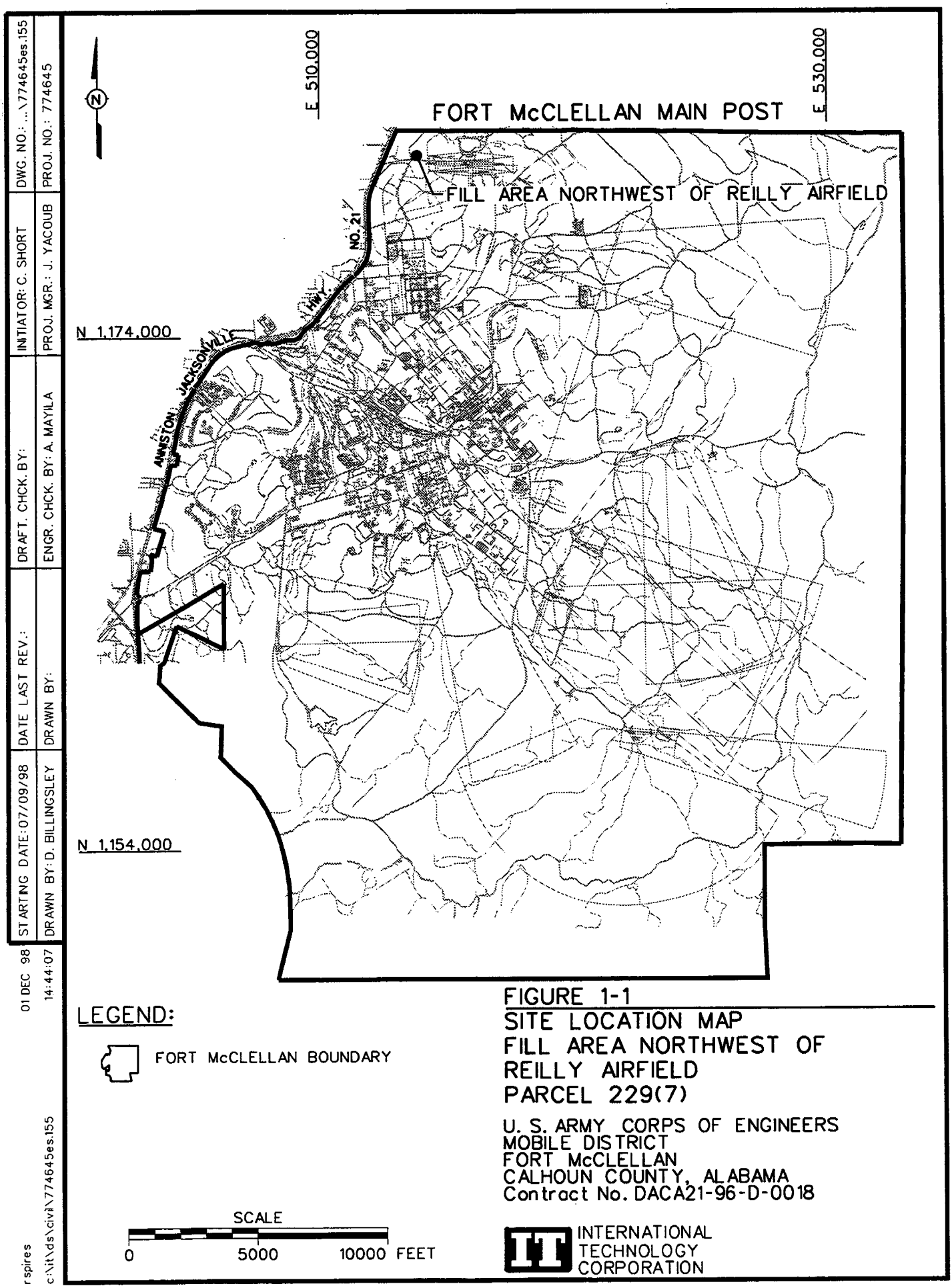

FIGURE 1-1
SITE LOCATION MAP
FILL AREA NORTHWEST OF
REILLY AIRFIELD
PARCEL 229(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018

INTERNATIONAL TECHNOLOGY CORPORATION

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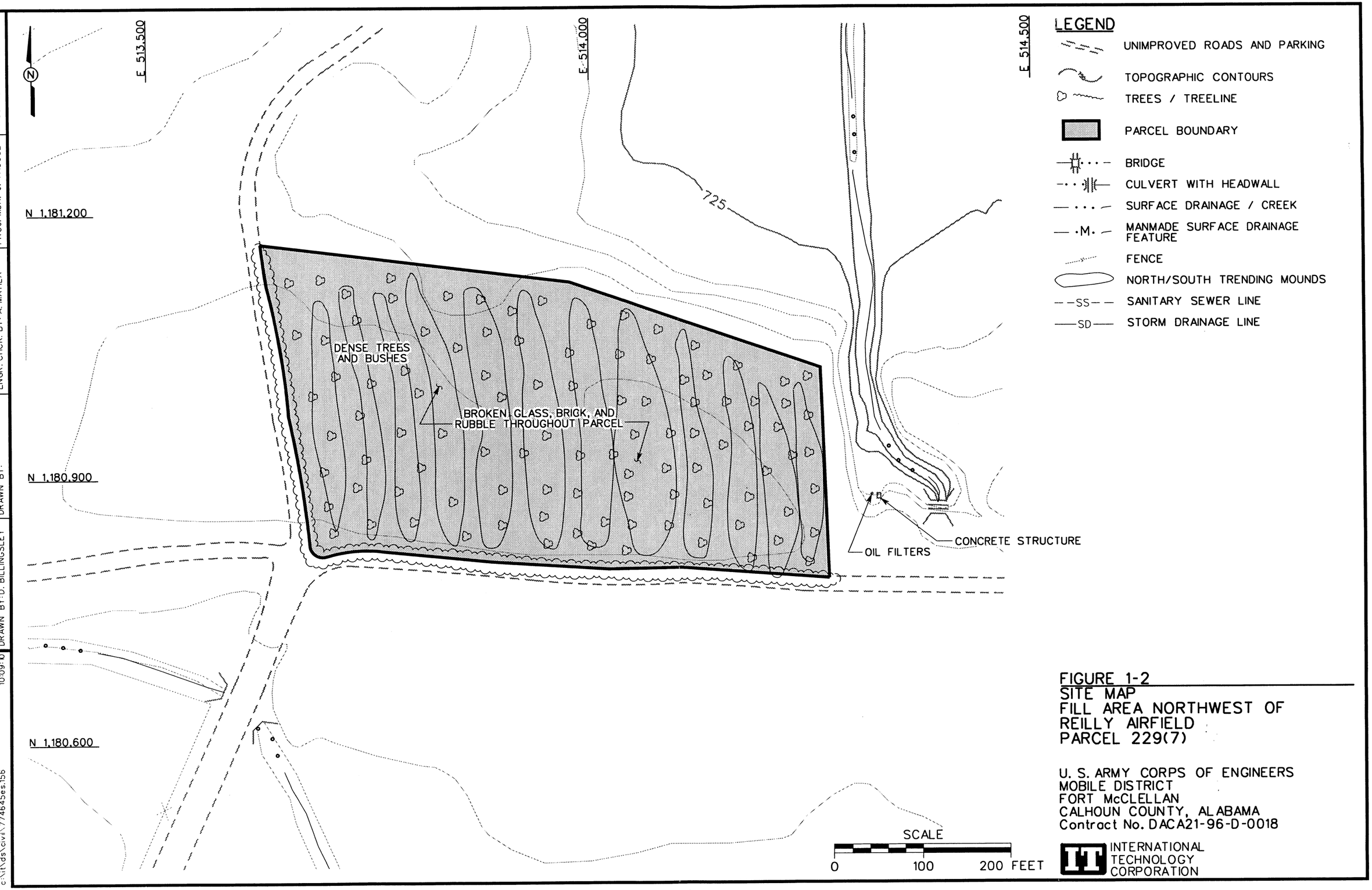

FIGURE 1-2
SITE MAP
FILL AREA NORTHWEST OF
REILLY AIRFIELD
PARCEL 229(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018

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map as Parcel 229(7) is approximately 5 acres (600 feet by 350 feet). Site elevation is approximately 740 feet and ground slope is north-northeast toward Reilly Lake. The northwest corner of Parcel 229(7) is less than 200 feet from Reilly Lake. The northeast corner of Parcel 229(7) is approximately 1,600 feet away from Reilly Lake. Various pieces of broken glass, brick, and concrete were observed throughout the parcel by the IT walk-over team (June and July, 1998). This parcel has been graded and covered with fill material several times such that the original topsoil no longer exists.

Adjacent to the eastern boundary is an escarpment with a vertical drop of approximately 40 feet. A stream is located at the foot of the escarpment flowing north beyond the parcel and eventually into Reilly Lake. Several oil filters were noted by the walk-over team lying on the west bank of the stream.

Information regarding operations at this parcel is not available. It is not known what, if any, disposal activities may have occurred at this location. Although interviews were conducted with current and retired FTMC personnel regarding past activities of the site, no one interviewed could recall disposal activities occurring at Parcel 229(7).

IT site visits on June 23, 1998 and July 21, 1998 did not reveal the linear mound. The dense foliage and groundcover on the parcel prevented the walk-over team from observing the features reported in the EBS.

This parcel is adjacent to the airfield (northwest) and is west-southwest of Reilly Lake. The soil map shows a natural drainage feature at the eastern boundary of the parcel which flows north, joins another drainage, and then flows east into Reilly Lake.

Immediately adjacent to the airfield and covering the entire parcel is the Cumberland gravelly loam, 2 to 6 percent slopes, eroded type soil (CoB2). The surface soil ranges from very dark brown to reddish brown. The subsoil ranges from dark red to red and from silty clay loam to clay in texture. The thickness of the alluvium ranges from 2 to 15 feet or more. In some areas, this soil is underlain by beds of gravel or sand. Infiltration is medium, permeability is moderate, and the capacity for available moisture is high. Runoff is medium and is a slight hazard.

These soils have developed in old general alluvium that washed from soils derived mainly from limestone and cherty limestone, and to some extent, shale and sandstone. Rounded chert, sand-

stone, and quartzite gravel, as much as 3 inches in diameter, are throughout the soil. Depth to water is greater than 20 feet and depth to bedrock is from 4 to greater than 20 feet.

1.3 Scope of Work

The scope of work for activities associated with Fill Area Northwest of Reilly Airfield, as specified in the statement of work (USACE, 1998), includes the following tasks:

- Develop the SFSP attachment
- Develop the SSHP attachment
- Conduct geophysical surveys to determine the parcel boundary and fill areas.
- Collect six surface soil samples, seven subsurface soil samples, three sediment samples, three surface water sample, five groundwater samples, and two depositional soil samples to determine if potential site-specific chemicals are present at the site and provide data useful in any future planned corrective measures and closure activities

Upon completion of the field activities and sample analyses, draft and final reports will be prepared to evaluate the absence or presence of contaminants at this site, and to recommend further remedial action, if appropriate. Reports will be prepared in accordance with current EPA Region IV and the Alabama Department of Environmental Regulation (ADEM) requirements.

2.0 Summary of Previous Environmental Studies

Environmental Science and Engineering, Inc. (ESE) conducted an environmental baseline survey (EBS) to document current environmental conditions of all FTMC property (ESE, 1998). The study identified sites that, based on available information, have no history of contamination and comply with U.S. Department of Defense (DOD) guidance on fast track cleanup at closing installations. The EBS also provides a baseline picture of FTMC properties by identifying and categorizing the properties by seven criteria.

1. Areas where no storage, release, or disposal (including migration) has occurred.
2. Areas where only storage has occurred.
3. Areas of contamination below action levels.
4. Areas where all necessary remedial actions have been taken.
5. Areas of known contamination with removal and/or remedial action underway.
6. Areas of known contamination where required response actions have not been taken.
7. Areas that are not evaluated or require further evaluation.

The EBS was conducted in accordance with the Community Environmental Response Facilitation Act (CERFA) (CERFA-Public Law 102-426) protocols and DOD policy regarding contamination assessment. Record searches and reviews were performed on all reasonably available documents from FTMC, ADEM, EPA Region IV, and Calhoun County, as well as a database search of Comprehensive Environmental Response, Compensation, and Liability Act-regulated substances, petroleum products, and Resource Conservation and Recovery Act-regulated facilities. Available historic maps and aerial photographs were reviewed to document historic land uses. Personal and telephone interviews of past and present FTMC employees and military personnel were conducted. In addition, visual site inspections were conducted to verify conditions of specific property parcels in an attempt to determine past operations and activities at the site. The Fill Area Northwest of Reilly Airfield, Parcel 229(7) site was identified as Category 7: a site where further evaluation is needed. Previous environmental studies have not been conducted at this site.

3.0 Site-Specific Data Quality Objectives

3.1 Overview

The data quality objectives (DQO) process is followed to establish data requirements. This process ensures that the proper quantity and quality of data are generated to support the decision-making process associated with the action selection for the Fill Area Northwest of Reilly Airfield, Parcel 229(7). This section incorporates the components of the DQO process described in the EPA publication EPA 540-R-93-071, *Data Quality Objectives Process for Superfund, Interim Final Guidance* (EPA, 1993). The DQO process as applied to the Fill Area Northwest of Reilly Airfield, Parcel 229(7) is described in more detail in Section 4.3 of the WP. Table 3-1 provides a summary of the factors used to determine the appropriate quantity of samples, the procedures necessary to meet the objectives of the SI, and to establish a basis for future action at this site.

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where available, as presented in Chapter 4.0 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with Corps of Engineers South Atlantic Savannah (CESAS) Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using Contract Laboratory Program (CLP)-like forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

Surface soil, subsurface soil, groundwater, surface water, sediment, and depositional soil will be sampled and analyzed to meet the objectives of this SI at the Fill Area Northwest of Reilly Airfield. Quality assurance/quality control (QA/QC) samples will be collected for all sample types as described herein. Samples will be analyzed by EPA-approved SW-846 methods, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

3.2 Data Users and Available Data

The intended data users and available data related to the site investigation at the Fill Area Northwest of Reilly Airfield, Parcel 229(7), presented in Table 3-1, have been used to formulate a site-specific conceptual model presented in Section 3.3 below. This conceptual model was

Table 3-1

Summary of Data Quality Objectives
Site Investigation, Reilly Airfield West, Parcel 229(7)
Fort McClellan, Calhoun County, Alabama

Potential Data Users	Available Data	Conceptual Site Model	Media of Concern	Data Uses and Objectives	Data Types	Analytical Level	Data Quantity
EPA ADEM USACE DOD IT Corporation Other Contractors Possible future land users	None	Contaminant Source Fill material Migration Pathways Dust emissions and volatilization to air. Erosion and runoff to surface water, sediment, and soil. Infiltration to subsurface soil. Biotransfer. Potential Receptors Groundskeeper (future) Construction worker (future) Resident (future) Recreational user (current and future) Venison consumption (current and future) PSSC VOCs SVOCs PCBs Herbicides Pesticides Metals Explosives	Surface Soil Subsurface soil Groundwater Surface Water Sediment	SI to confirm whether potential site-specific chemicals present in the site media. Definitive quality data for future decision making	Surface Soil TCL VOCs, TCL SVOCs, TAL Metals, CI Pesticides, PCBs, CI Herbicides, OP Pesticides, Explosives	Definitive data in CESAS Level B	6 direct-push + QC
					Subsurface Soil TCL VOCs, TCL SVOCs, TAL Metals, CI Pesticides, PCBs, CI Herbicides, OP Pesticides, Explosives	Definitive data in CESAS Level B	7 direct-push + QC
					Groundwater TCL VOCs, TCL SVOCs, TAL Metals, CI Pesticides, PCBs, CI Herbicides, OP Pesticides, Explosives	Definitive data in CESAS Level B	5 direct-push + QC
					Surface Water TCL VOCs, TCL SVOCs, TAL Metals, CI Pesticides, PCBs, CI Herbicides, OP Pesticides, Explosives	Definitive data in CESAS Level B data packages	3 +QC
					Sediment TCL VOCs, TCL SVOCs, TAL Metals, TOC Grain size, CI Pesticides, PCBs, CI Herbicides, OP Pesticides, Explosives	Definitive data in CESAS Level B	3 + QC
					Depositional Soil TCL VOCs, TCL SVOCs, TAL Metals, CI Pesticides, PCBs, CI Herbicides, OP Pesticides, Explosives	Definitive data in CESAS Level B	2 + QC

ADEM - Alabama Department of environmental Management.
CESAS - Corps of Engineers South Atlantic Savannah
DOD - U.S. Department of Defense.
EPA - U.S. Environmental Protection Agency.
OP - Organophosphorus.
PSSC - Potential site-specific chemicals.
QC - Quality control.
SVOC - Semivolatile organic compound.
TAL - Target analyte list.
TOC - Total organic carbon.
USACE - U.S. Army Corps of Engineers.
TCL - Target compound list.
VOC - Volatile organic compound.

developed to support the preparation of this SFSP, which is necessary to meet the objectives of these activities and to establish a basis for future action at the site. The data users for the data and information generated during field activities are primarily the EPA, USACE, ADEM, FTMC, and the USACE supporting contractors. This SFSP, along with the necessary companion documents, has been designed to provide the regulatory agencies with sufficient detail to reach a determination as to the adequacy of the scope of work. The program has also been designed to provide the level of defensible data and information required to confirm or rule out the existence of residual potential site-specific chemicals (PSSC) in the site media.

3.3 Conceptual Site Exposure Model

The conceptual site exposure model (CSEM) provides the basis for identifying and evaluating the potential risks to human health to support the risk assessment. The CSEM includes all plausible receptor scenarios and potential exposure pathways. The CSEM graphically presents all possible pathways, by which a potential receptor may be exposed, including all sources, release and transport pathways, and exposure routes. In addition, it facilitates consistent and comprehensive evaluation of human health risks, and helps ensure that potential pathways are not overlooked. The elements necessary to construct a complete exposure pathway and develop the CSEM include:

- Source (i.e., contaminated environmental) media
- Contaminant release mechanisms
- Contaminant transport pathways
- Receptor scenarios
- Exposure pathways.

Contaminant release mechanisms and transport pathways are not required to identify receptor contact scenarios with contaminated source media.

Parcel 229(7) is a densely vegetated area northwest of Reilly Airfield that includes linear features identified on aerial photographs as potential fill mounds. Additional data is needed to either confirm or dispel the presence of a fill site, and identify any potential site-specific chemicals. Pending the receipt of additional data, the CSEM reflects all plausible contaminant source media, pathways of concern, and receptors applicable to the area. Potential migration pathways of concern include: infiltration and leaching to subsurface soil and groundwater; erosion and runoff to surface water, depositional soil, and sediment; biotransfer through venison; and dust emissions and volatilization to air. Although the future site use for this parcel has been identified as industrial, all possible future receptors are considered. The following plausible receptors are identified in the CSEM:

- The resident scenario is considered for future purposes only, because there are currently not any residents present at the site.

- The groundskeeper scenario is considered for future purposes only, because the site is currently not maintained by a groundskeeper.

- The construction worker scenario is considered for future purposes only, because the site is currently not under construction.

- The recreational site user scenario, which includes hunting, youthful and other intruders, hikers, campers and other recreational users is considered for both current and future purposes, although current recreational site usage is uncertain.

- The venison consumption scenario is considered for both current and future purposes, as associated hunting activities may take place at the site now and in the future.

- The fish consumption scenario is excluded, as the site does not drain into a body of water suitable for fishing that would lead to significant human consumption.

A summary of relevant contaminant release and transport mechanisms, source and exposure media, and receptors and exposure pathways is provided in Table 3-1 and Figure 3-1.

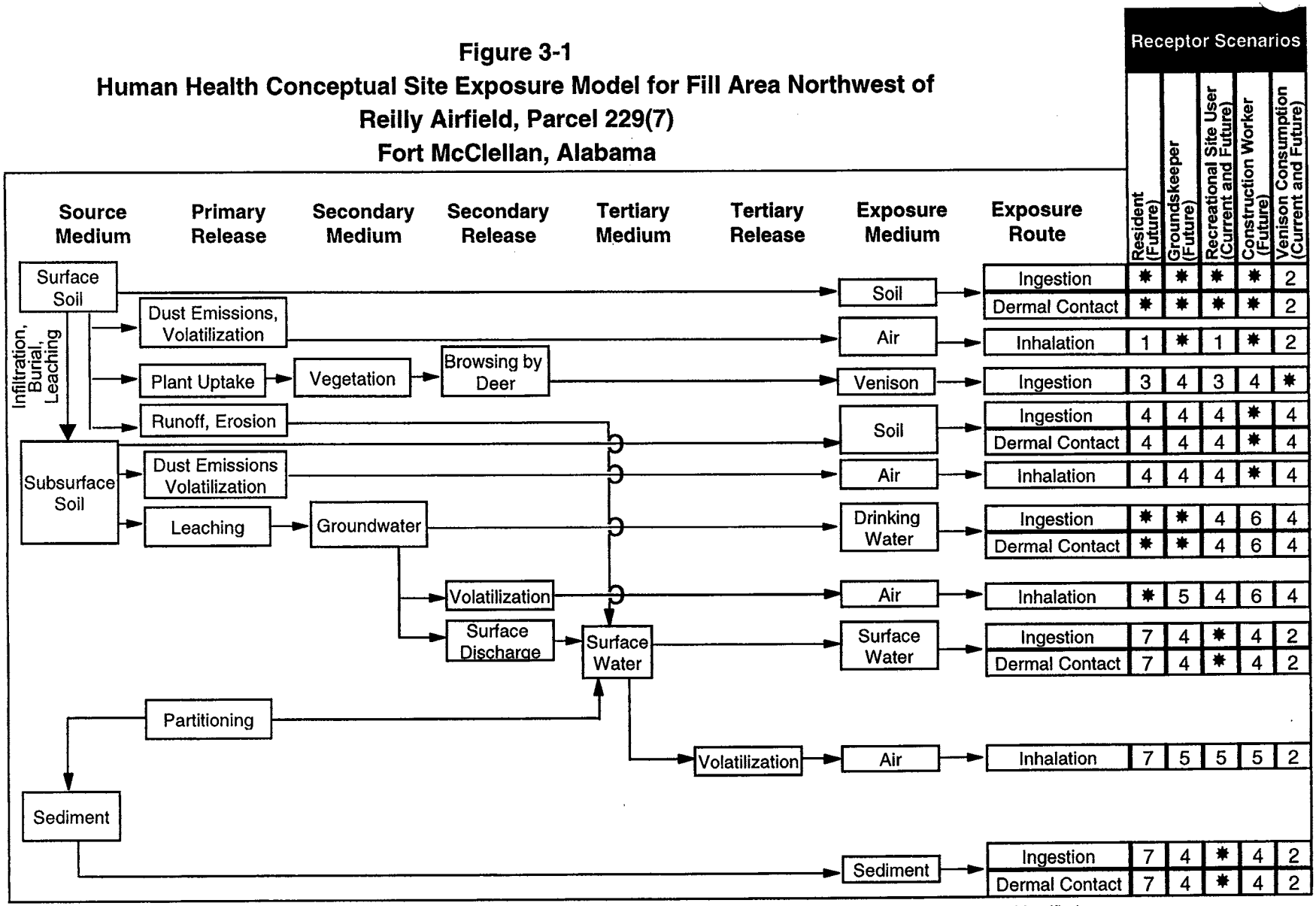
3.4 Decision-Making Process, Data Uses, and Needs

The decision-making process consists of a seven-step process that is presented in detail in Section 4.3 of the WP and will be followed during the site investigation at the Fill Area Northwest of Reilly Airfield, Parcel 229(7). Data uses and needs are summarized in Table 3-1.

3.4.1 Risk Evaluation

Confirmation of contamination at the Fill Area Northwest of Reilly Airfield, Parcel 229(7), will be based on a comparison of detected site contaminants to site-specific screening levels developed in the WP (IT, 1998b). EPA definitive data with CESAS Level B (USACE, 1994) data summary packages will be used to achieve detection limits sufficient to determine whether or not the established guidance criteria are exceeded in site media. Definitive data will be adequate for confirming the presence or absence of site contamination and for supporting a focused feasibility study and risk assessment.

Figure 3-1
Human Health Conceptual Site Exposure Model for Fill Area Northwest of Reilly Airfield, Parcel 229(7)
Fort McClellan, Alabama



Note: Although surface soil is not a media of concern, all plausible contaminant source media, pathways of concern, and receptors are identified.

* = Complete exposure pathway quantified in SSSL development.

1 = Volatilization from undisturbed surface soil deemed insignificant; soil is likely to be paved or vegetated, reducing dust emissions to insignificant levels; inhalation pathway not quantified.

2 = This scenario is created to assess indirect (food chain) exposure to surface soil.

3 = Evaluated under venison consumption scenario.

4 = Incomplete exposure pathway.

5 = Although theoretically complete, this pathway is judged to be insignificant.

6 = Although theoretically complete, these pathways are not quantified for the construction worker because SSSLs developed for the groundskeeper would be at least as restrictive.

7 = Although theoretically complete, SSSLs for these pathways are developed only for the recreational site user. SSSLs developed for the recreational site user may be used to estimate risk for this receptor.

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Assessment of potential ecological risk associated with sites or parcels (e.g., surface water and sediment sampling, specific ecological assessment methods, etc.) is addressed in the installation-wide WP.

3.4.2 Data Types and Quality

Surface soil, subsurface soil, groundwater, surface water, sediment, and depositional soil will be sampled and analyzed in order to meet the objectives of the site investigation at the Fill Area Northwest of Reilly Airfield, Parcel 229(7). Quality assurance/quality control (QA/QC) samples will be collected for all sample types as described in Chapter 4.0 of this SFSP. Samples will be analyzed by EPA-approved SW-846 methods, including Update III methods where applicable. Samples will be analyzed by EPA-approved SW-846 methods, where available; comply with EPA definitive data requirements; and be reported using hard copy data packages. In addition to meeting the quality needs of this SI, data analyzed at this level of quality are appropriate for all phases of site characterization, remedial investigation, and risk assessment.

3.4.3 Precision, Accuracy, and Completeness

Laboratory requirements of precision, accuracy, and completeness for this SI are provided in Section 9.0 of the QAP.

4.0 Field Activities

The parcel of property being investigated under this SI was identified during the EBS (ESE, 1998) and categorized as a Category 7 site. Category 7 indicates the sites that have not been evaluated or that need additional investigation. To meet the objectives of Sections 1.3 and 3.0, the environmental sampling program will consist of a geophysical survey to determine the boundaries of the fill area, and the collection of six surface soil samples, seven subsurface soil samples, five groundwater samples, one surface water sample, one sediment sample, and two depositional soil samples.

4.1 Utility Clearances

Prior to performing any intrusive sampling, a utility clearance will be performed at all locations where soil and groundwater samples will be collected, using the procedure outlined in Section 4.2.6 of the SAP. The site manager will mark the proposed locations with stakes, coordinate with the installation to clear the proposed locations for utilities, and obtain digging permits. Once the locations are cleared, the stakes will be labeled as cleared.

4.2 Geophysical Survey

A surface geophysical survey will be conducted over the Fill Area Northwest of Reilly Airfield to determine the fill boundaries, and to locate the proposed sample locations. The geophysical methods to be used include magnetics, frequency-domain electromagnetic (EM) induction, and ground penetrating radar (GPR). These combined methods offer the best approach to screening sites for buried metallic debris, a common component of most landfill operations. Due to the thick vegetation present at this site a 3-foot-wide corridor will be cleared through the brush at intervals of 20 feet. When clearing is completed, a global positioning system (GPS) will be used to provide geophysical survey control.

4.2.1 Methodology and Instrumentation

The magnetic surveys will be conducted using a Geometrics G-858G magnetic gradiometer (for collecting survey data) and a Geometrics G-856AX magnetometer or equivalent (for collecting base station data). Frequency-domain EM surveys will be conducted using a Geonics EM31 terrain conductivity meter, coupled to an Omnidata DL720 digital data logger. The GPR survey will be conducted using a Geophysical Survey Systems Inc. System-2P or equivalent, coupled to either 200- or 400-megahertz antennas, depending on site conditions and signal attenuation. If required, a Metrotech 9860-NRL EM utility locator or equivalent, will be used confirm the

presence or absence of metallic subsurface utilities, which may be evident as linear anomalies in the EM31 contour maps.

Geophysical survey procedures to be used to conduct the investigation, including survey control, equipment calibration, field base station and data validation, data processing and interpretation, and file tracking procedures, will be in accordance with the methods and procedures outlined in Chapter 4.0 of the installation-wide SAP and the following IT standard operating procedures (SOP) for geophysical investigations:

- ITGP-001; Surface Magnetic Surveys
- ITGP-002; Surface Frequency-Domain EM Surveys
- ITGP-003; GPR Surveys
- ITGP-005; Global Positioning System (GPS) System Surveys.

The following tasks will be performed prior to conducting the survey:

- Review existing site surface and subsurface information (e.g., aerial photographs, utility maps, boring logs, etc.).
- Evaluate the potential influence of cultural features (e.g., overhead and subsurface utilities, fences, buildings, etc.).
- Conduct a visual inspection of the sites to verify the likely location of the former dump area.
- Conduct reconnaissance scans across the general area of the sites with the magnetic and/or EM instruments to determine whether geophysical anomalies exist within the proposed survey areas and/or near the proposed boundaries. The geophysical survey area boundaries for each site will be chosen in the field based on these results.

Following visual inspection of the sites and evaluation of reconnaissance scans with the instruments, a base grid will be staked throughout the site such that the resolution objectives of the investigation are achieved. The base grid will be established using the GPS surveying technique. The geophysics base grid will be referenced to the Alabama State Plane Coordinate System. Using the base grid as a reference, the vegetation removal crew will clear approximately 3-foot-wide lanes, spaced 20 feet apart through the brush. Following brush removal, the geophysics crew will use the GPS to establish control points on 20-foot centers throughout the site. The control points will be marked with surveyor's paint and/or plastic pin flags. To the

extent possible, the grids will be oriented in the north-to-south direction. If surface metal is present, it will be removed where necessary prior to the collection of geophysical data.

After the survey grids are complete and control points are marked, all surface objects that could potentially affect the geophysical data (e.g., surface metal, variations in topography, overhead utilities, etc.) will be mapped using the GPS so that anomalies caused by these objects can be correctly interpreted.

Geophysical data processing will be completed in the field following the survey. The EM and magnetic data will be presented as color-enhanced contour maps to facilitate recognition of subtle anomalies. Geophysical anomalies will be field-checked to verify their source as either surface culture or subsurface objects/debris. Surface source materials responsible for the observed geophysical anomalies will be documented on the contour maps. Digital GPR data will be collected where necessary to aid with interpreting anomalies seen in the EM and magnetic data maps.

The conclusions from the geophysical survey at Parcel 229(7) will be incorporated into the SI report. Geophysical results will be used to properly position the proposed sample locations at Parcel 229(7).

4.2.2 Areal Coverage

Parcel 229(7) geophysical surveys will encompass an area of approximately 600 feet by 350 feet. The following is a list of steps that will be performed at the site:

- G-858G magnetic gradiometer data will be collected at 0.5-second intervals (approximate 2.0- to 2.5-foot intervals) along N-S oriented survey lines spaced 20 feet apart.
- EM31 survey data will be collected at 5-foot intervals along N-S and east to west (E-W) oriented survey lines spaced 20 feet apart.
- GPR profile data will be collected to further characterize anomalies seen in the magnetic and/or EM data. The orientation and length of the GPR lines will be chosen in the field to yield the most usable results.
- In areas of the site where linear EM31 anomalies potentially representing pipelines/utilities are observed in the contoured data, the lines will be verified with the Metrotech 9860-NRL EM utility locator. Verification is necessary since the anomalous response caused by subsurface utilities may sometimes be mistaken for large

buried metal objects. The locations of interpreted pipelines will be marked in the field with paint and placed on the site map.

4.3 Environmental Sampling

The environmental sampling performed during the SI at the Fill Area Northwest of Reilly Airfield, Parcel 229(7), will include the collection of surface soil samples, subsurface soil samples, sediment samples, surface water samples, groundwater samples, and depositional soil samples. The placement of sample locations was determined by site physical characteristics noted during a site walk-over, and by review of historical documents pertaining to activities conducted at the site. Sample locations may be revised based on the results of the geophysical survey. The sample locations, media, and rationale are summarized in Table 4-1. Samples will be submitted for laboratory analyses of site related parameters listed in Section 4.6. The sample designations and QA/QC sample quantities are shown in Tables 4-2, 4-3 and 4-4.

4.3.1 Surface Soil Sampling

Surface soil samples will be collected from six soil borings installed at the Fill Area Northwest of Reilly Airfield, Parcel 229(7).

4.3.1.1 Sampling Locations and Rationale

The surface soil sampling rationale is provided in Table 4-1. Proposed sampling locations are shown on Figure 4-1. Surface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. The exact surface soil sampling locations will be determined in the field by the on-site geologist based on actual field conditions and the results of the geophysical survey.

4.3.1.2 Sample Collection

Surface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. Surface soil samples will be collected from the upper 1 foot of soil by direct-push technology in accordance with the procedures specified in Sections 4.7.1.1 of the SAP. Collected soil samples will be screened (for information only, not to select which sample is analyzed) using a photoionization detector (PID) in accordance with Section 4.15 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

Table 4-1

Site Sampling Rationale
Fill Area Northwest of Reilly Airfield, Parcel 229(7)
Fort McClellan, Alabama

Sample Location	Media	Rationale
PPMP-229-GP01	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Surface soil, subsurface soil, and groundwater samples will be collected on the northeast boundary of the site north of the east cleared area for coverage at the edge of the slope to determine if PSSC are present.
PPMP-229-GP02	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Surface soil, subsurface soil, and groundwater samples will be collected at the northeast end of the site near the edge of the slope for coverage downgradient toward the stream to determine if PSSC are present.
PPMP-229-GP03	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Surface soil, subsurface soil, and groundwater samples will be collected at the southeast end of the site adjacent to the unimproved road to determine if PSSC are present.
PPMP-229-GP04	SURFACE SOIL SUBSURFACE SOIL GROUNDWATER	Surface soil, subsurface soil, and groundwater samples will be collected at the intersection of the unimproved road (southwest) to determine if PSSC are present.
PPMP-229-GP05	SURFACE SOIL SUBSURFACE SOIL	Surface soil and subsurface soil samples will be collected in the cleared area at the mound (west) to determine if PSSC are present.
PPMP-229-GP06	SURFACE SOIL SUBSURFACE SOIL	Surface soil and subsurface soil samples will be collected at the mound area (east) to determine if PSSC are present.
PPMP-229-GP07	SURFACE SOIL GROUNDWATER	Subsurface soil and groundwater samples will be collected in the northwest section of the site determine if PSSC is present.
PPMP-229-SW/SD01	SURFACE WATER SEDIMENT	Surface water and sediment samples will be collected from the stream downgradient from the eastern boundary of the parcel to determine if PSSC are present.
PPMP-229-SW/SD02	SURFACE WATER SEDIMENT	Surface water and sediment samples will be collected from the stream at a downgradient location to determine if PSSC are present.

Table 4-1

Site Sampling Rationale
Fill Area Northwest of Reilly Airfield, Parcel 229(7)
Fort McClellan, Alabama

Sample Location	Media	Rationale
PPMP-229-SW/SD03	SURFACE WATER SEDIMENT	Surface water and sediment samples will be collected at the drainage feature near the southwestern corner of the parcel.
PPMP-229-DEP01	DEPOSITIONAL SOIL	A depositional soil sample will be collected outside the northeast corner boundary of the parcel west of the stream to determine if PSSC are present.
PPMP-229-DEP02	DEPOSITIONAL SOIL	A depositional soil sample will be collected at the foot of the escarpment just above the stream/drainage where oil filters were noted to determine if PSSC are present.

LEGEND

- UNIMPROVED ROADS AND PARKING
- TOPOGRAPHIC CONTOURS
- TREES / TREELINE
- PARCEL BOUNDARY
- BRIDGE
- CULVERT WITH HEADWALL
- SURFACE DRAINAGE / CREEK
- MANMADE SURFACE DRAINAGE FEATURE
- FENCE
- NORTH/SOUTH TRENDING MOUNDS
- SANITARY SEWER LINE
- STORM DRAINAGE LINE
- PROPOSED SURFACE WATER/SEDIMENT SOIL SAMPLE
- PROPOSED SURFACE AND SUBSURFACE SOIL SAMPLE
- PROPOSED GROUNDWATER AND SUBSURFACE SOIL SAMPLE
- PROPOSED DEPOSITIONAL SOIL SAMPLE
- PROPOSED GROUNDWATER, SURFACE AND SUBSURFACE SOIL SAMPLE

FIGURE 4-1
PROPOSED SAMPLE LOCATIONS
FILL AREA NORTHWEST OF
REILLY AIRFIELD
PARCEL 229(7)

U. S. ARMY CORPS OF ENGINEERS
MOBILE DISTRICT
FORT McCLELLAN
CALHOUN COUNTY, ALABAMA
Contract No. DACA21-96-D-0018

INTERNATIONAL
TECHNOLOGY
CORPORATION

DWG. NO.: 4645es.157
PROJ. NO.: 774645
INITIATOR: C. SHORT
PROJ. MGR.: J. YACOUB
DRAFT. CHCK. BY:
ENGR. CHCK. BY: A. MAYILA
DATE LAS
DRAWN BY:
STARTING DATE: 07/09/98
DRAWN BY: D. BILLINGSLEY
03 DEC 98
12:50:15
rspires
c:\it\dsv\...774645es.157

Table 4-1

Site Sampling Rationale
Fill Area Northwest of Reilly Airfield, Parcel 229(7)
Fort McClellan, Alabama

Sample Location	Media	Rationale
PPMP-229-SW/SD03	SURFACE WATER SEDIMENT	Surface water and sediment samples will be collected at the drainage feature near the southwestern corner of the parcel.
PPMP-229-DEP01	DEPOSITIONAL SOIL	A depositional soil sample will be collected outside the northeast corner boundary of the parcel west of the stream to determine if PSSC are present.
PPMP-229-DEP02	DEPOSITIONAL SOIL	A depositional soil sample will be collected at the foot of the escarpment just above the stream/drainage where oil filters were noted to determine if PSSC are present.

Table 4-2

Surface and Subsurface Soil Sample Designations and QA/QC Sample Quantities
Fill Area Northwest of Reilly Airfield, Parcel 229(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
PPMP-229-GP01	PPMP-229-GP01-SS-KC0001-REG	[a]			PPMP-229-GP01-SS-KC0001-MS	TCL VOCs, TCL SVOCs, Cl. Pesticides, PCBs,
	PPMP-229-GP01-DS-KC0002-REG				PPMP-229-GP01-SS-KC0001-MSD	OP Pesticides, Cl. Herbicides, TAL Metals, N. Explosives
PPMP-229-GP02	PPMP-229-GP02-SS-KC0003-REG	[a]				TCL VOCs, TCL SVOCs, Cl. Pesticides, PCBs,
	PPMP-229-GP02-DS-KC0004-REG					OP Pesticides, Cl. Herbicides, TAL Metals, N. Explosives
PPMP-229-GP03	PPMP-229-GP03-SS-KC0005-REG	[a]				TCL VOCs, TCL SVOCs, Cl. Pesticides, PCBs,
	PPMP-229-GP03-DS-KC0006-REG					OP Pesticides, Cl. Herbicides, TAL Metals, N. Explosives
PPMP-229-GP04	PPMP-229-GP04-SS-KC0007-REG	[a]				TCL VOCs, TCL SVOCs, Cl. Pesticides, PCBs,
	PPMP-229-GP04-DS-KC0008-REG					OP Pesticides, Cl. Herbicides, TAL Metals, N. Explosives
PPMP-229-GP05	PPMP-229-GP05-SS-KC0009-REG	[a]				TCL VOCs, TCL SVOCs, Cl. Pesticides, PCBs,
	PPMP-229-GP05-DS-KC0010-REG					OP Pesticides, Cl. Herbicides, TAL Metals, N. Explosives
PPMP-229-GP06	PPMP-229-GP06-SS-KC0011-REG	[a]	PPMP-229-GP06-DS-KC0013-FD	PPMP-229-GP06-DS-KC0014-FS		TCL VOCs, TCL SVOCs, Cl. Pesticides, PCBs,
	PPMP-229-GP06-DS-KC0012-REG					OP Pesticides, Cl. Herbicides, TAL Metals, N. Explosives
PPMP-229-GP07	PPMP-229-GP07-DS-KC0015-REG	[a]				TCL VOCs, TCL SVOCs, Cl. Pesticides, PCBs,
						OP Pesticides, Cl. Herbicides, TAL Metals, N. Explosives

[a] Actual sample depth selected for analysis will be at the discretion of the onsite geologist and will be based on field observation.

Cl - Chlorinated.
MS/MSD - Matrix spike/matrix spike duplicate.
N - Nitroaromatic.
OP - Organophosphorus.
QA/QC - Quality assurance/quality control.
SVOC - Semivolatile organic compound.
TAL - Target analyte list.
TCL - Target compound list.
VOC - Volatile organic compound.

Table 4-3

Groundwater Sample Designations and QA/QC Sample Quantities
Fill Area Northwest of Reilly Airfield, Parcel 229(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
PPMP-229-GP01	PPMP-229-GP01-GW-KC3001-REG	[a]			PPMP-229-GP01-GW-KC3001-MS PPMP-229-GP01-GW-KC3001-MSD	TCL VOCs, TCL SVOCs, Cl. Pesticides, PCBs, Op Pesticides, Cl. Herbicides, TAL Metals, N. Explosives
PPMP-229-GP02	PPMP-229-GP02-GW-KC3002-REG	[a]	PPMP-229-GP02-GW-KC3003-FD	PPMP-229-GP02-GW-KC3004-FS		TCL VOCs, TCL SVOCs, Cl. Pesticides, PCBs, Op Pesticides, Cl. Herbicides, TAL Metals, N. Explosives
PPMP-229-GP03	PPMP-229-GP03-GW-KC3005-REG	[a]				TCL VOCs, TCL SVOCs, Cl. Pesticides, PCBs, Op Pesticides, Cl. Herbicides, TAL Metals, N. Explosives
PPMP-229-GP04	PPMP-229-GP04-GW-KC3006-REG	[a]				TCL VOCs, TCL SVOCs, Cl. Pesticides, PCBs, Op Pesticides, Cl. Herbicides, TAL Metals, N. Explosives
PPMP-229-GP07	PPMP-229-GP07-GW-KC3007-REG	[a]				TCL VOCs, TCL SVOCs, Cl. Pesticides, PCBs, Op Pesticides, Cl. Herbicides, TAL Metals, N. Explosives

[a]Sample depth will depend on where sufficient first water is encountered to collect a water sample.

QA/QC - Quality assurance/quality control.
MS/MSD - Matrix spike/matrix spike duplicate.
TCL - Target compound list.
VOC - Volatile organic compound.
SVOC - Semivolatile organic compound.
Cl - Chlorinated.
OP - Organophosphorus.
TAL - Target analyte list.
N - Nitroaromatic.

Table 4-4

Surface Water, Sediment and Depositional Soil Sample Designations and QA/QC Sample Quantities
Fill Area Northwest of Reilly Airfield, Parcel 229(7)
Fort McClellan, Calhoun County, Alabama

Sample Location	Sample Designation	Sample Depth (ft)	QA/QC Samples			Analytical Suite
			Field Duplicates	Field Splits	MS/MSD	
PPMP-229-SW/SD01	PPMP-229-SW/SD01-SW-KC2001-REG	N/A	a	a	a	TCL VOCs, PCBs, TCL SVOCs, Cl Pesticides, Cl Herbicides, OP Pesticides, N. Explosives, TAL Metals
	PPMP-229-SW/SD01-SD-KC1001-REG	0 - 0.5	a	a	a	TCL VOCs, PCBs, TCL SVOCs, Cl Pesticides, Cl Herbicides, OP Pesticides, N. Explosives, TAL Metals, TOC, Grain Size
PPMP-229-SW/SD02	PPMP-229-SW/SD02-SW-KC2002-REG	0.-0.5	a	a	a	TCL VOCs, PCBs, TCL SVOCs, Cl Pesticides, Cl Herbicides, OP Pesticides, N. Explosives, TAL Metals
	PPMP-229-SW/SD02-SD-KC1002-REG	0-0.5	a	a	a	TCL VOCs, PCBs, TCL SVOCs, Cl Pesticides, Cl Herbicides, OP Pesticides, N. Explosives, TAL Metals
PPMP-229-SW/SD03	PPMP-229-SW/SD03-SW-KC2003-REG	0-0.5	a	a	a	TCL VOCs, PCBs, TCL SVOCs, Cl Pesticides, Cl Herbicides, OP Pesticides, N. Explosives, TAL Metals
	PPMP-229-SW/SD03-SD-KC1003-REG	0-0.5	a	a	a	TCL VOCs, PCBs, TCL SVOCs, Cl Pesticides, Cl Herbicides, OP Pesticides, N. Explosives, TAL Metals
PPMP-229-DEP01	PPMP-229-DEP01-DEP-KC0016-REG	0-0.5	a	a	a	TCL VOCs, PCBs, TCL SVOCs, Cl Pesticides, Cl Herbicides, OP Pesticides, N. Explosives, TAL Metals
PPMP-229-DEP02	PPMP-229-DEP02-DEP-KC0017-REG	0-0.5	a	a	a	TCL VOCs, PCBs, TCL SVOCs, Cl Pesticides, Cl Herbicides, OP Pesticides, N. Explosives, TAL Metals

[a]Note: QA/QC samples quantities are not included in this table. QA/QC samples are included in soil and groundwater QA/QC samples shown in Table 4-2 and 4-3, respectively.

QA/QC - Quality assurance/quality control.
MS/MSD - Matrix spike/matrix spike duplicate.
N - Nitroaromatic.
TCL - Target compound list.
VOC - Volatile organic compound.
SVOC - Semivolatile organic compound.
Cl - Chlorinated.
OP - Organophosphorus.
TAL - Target analyte list.
TOC - Total organic carbon.

4.3.2 Subsurface Soil Sampling

Subsurface soil samples will be collected from seven soil borings installed at the Fill Area Northwest of Reilly Airfield, Parcel 229(7).

4.3.2.1 Sample Locations and Rationale

The subsurface soil sampling rationale is presented in Table 4-1. Subsurface soil sample designations, depths, and required QA/QC sample quantities are listed in Table 4-2. The exact soil boring sampling locations will be determined in the field by the on-site geologist based on actual field observations and the results of the geophysical survey.

4.3.2.2 Sample Collection

Subsurface soil samples will be collected from soil borings at a depth greater than 1 foot bgs in the unsaturated zone. The soil borings will be advanced and soil samples collected using the direct-push sampling procedures specified in Section 4.7.1.1 of the SAP.

Soil samples will be collected continuously for the first 12 feet, or until groundwater or refusal is reached. A detailed lithogical log will be recorded by the on-site geologist for each borehole. At least one subsurface sample from each borehole will be selected for analyses. The collected subsurface soil samples will be field-screened using a PID in accordance with Section 4.15 of the SAP to measure samples exhibiting elevated readings above background (readings in ambient air). Typically, the sample showing the highest reading will be selected and sent to the laboratory for analysis. If none of the samples indicate readings above background using the PID, then the deepest interval from the soil boring will be sampled and submitted to the laboratory for analyses. Subsurface soil samples will be selected for analyses from any depth interval if the on-site geologist suspects PSSCs at the interval. Site conditions such as lithology may also determine the actual sample depth interval submitted for analyses. More than one subsurface soil sample will be collected if field measurements and observations indicate a possible layer of PSSC and/or additional sample data would provide insight to the existence of any PSSCs.

Sample documentation and chain of custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

4.3.3 Groundwater Sampling

Groundwater samples will be collected from five temporary monitoring wells installed at the Fill Area Northwest of Reilly Airfield, Parcel 229(7).

4.3.3.1 Sampling Locations and Rationale

Groundwater samples will be collected from direct-push temporary wells installed at the site. Groundwater samples will be collected from the locations shown on Figure 4-1. The groundwater sampling rationale is listed in Table 4-1. The groundwater sample designations, depths, and required QA/QC sample quantities are listed in Table 4-3. The exact sampling locations will be determined in the field by the on-site geologist based on actual field conditions and the results of the geophysical survey.

4.3.3.2 Sample Collection

Groundwater samples will be collected in accordance with the procedures and methods specified in Sections 4.7.1.1 of the SAP. Direct-push temporary wells will be completed in soil borings advanced into the water table (to a depth where sufficient water is encountered) to collect a groundwater sample.

At direct-push temporary well locations, where either refusal is reached before encountering water or direct-push temporary wells do not yield sufficient groundwater for laboratory analysis, conventional drilling methods will be utilized to install temporary monitoring wells. Temporary monitoring wells will be completed as specified in the addendum to Appendix C of the SAP, Section C.5.7 (IT, 1998c).

Sample documentation and chain of custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.6 of this SFSP.

4.3.4 Surface Water Sampling

Three surface water samples will be collected at the Fill Area Northwest of Reilly Airfield, Parcel 229(7). The surface water samples will be collected from the stream located east of the site.

4.3.4.1 Sample Locations and Rationale

The surface water sampling rationale is listed in Table 4-1. Surface water samples will be collected from the locations proposed on Figure 4-1. The surface water sample designation and required QA/QC sample quantities are listed in Table 4-4. The exact sampling location will be determined in the field based on drainage pathways and actual field observations.

4.3.4.2 Sample Collection

Surface water samples will be collected in accordance with the procedures specified in Section 4.9.1.3 of the SAP. Sample documentation and chain of custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1, of the QAP. The samples will be analyzed for the parameters listed in Section 4.6.

4.3.5 Sediment Sampling

Three sediment samples will be collected during the SI at the Fill Area Northwest of Reilly Airfield, Parcel 229(7). The sediment samples will be collected at the same location as the surface water sample presented in Section 4.3.4.

4.3.5.1 Sample Locations and Rationale

The locations for sediment sample collection are shown on Figure 4-1. Sediment sampling rationale is presented in Table 4-1. The sediment sample designations and required QA/QC sample quantities are listed in Table 4-4. The actual sample point selected will be at the discretion of the ecological sampler based on the drainage pathways and actual field observations.

4.3.5.2 Sample Collection

Sediment sample collection will be conducted in accordance with the procedures specified in Section 4.9.1.2 of the SAP. Sample documentation and chain of custody will be recorded as specified in Section 4.13 of the SAP. The sediment samples will be analyzed for the parameters listed in Section 4.6.

4.3.6 Depositional Soil Sampling

Two depositional soil samples will be collected at the Fill Area Northwest of Reilly Airfield, Parcel 229(7).

4.3.6.1 Sample Locations and Rationale

Depositional soil samples will be collected from 2 locations. One location is the northeast corner of the parcel. The other location is at the foot of the escarpment near the stream/drainage feature east of the parcel. The sampling rationale is listed in Table 4-1. The proposed sampling locations are shown in Figure 4-1. The depositional soil sample designations and required QA/QC sample quantities are listed in Table 4-4. The actual depositional soil sample points selected will be at the discretion of the ecological sampler based on the drainage pathways and on actual field observations.

4.3.6.2 Sample Collection

Depositional soil samples will be collected in accordance with the procedures for surface soil sample collection specified in Section 4.9.1.1 of the SAP. Sample documentation and chain-of-custody will be recorded as specified in Section 4.13 of the SAP. Sample containers, sample volumes, preservatives, and holding times for the analyses required in this SFSP are listed in Section 5.0, Table 5-1 of the QAP. The samples will be analyzed for the parameters listed in Section 4.6.

4.4 Surveying of Sample Locations

Sampling locations will be marked with pin flags, stakes, and/or flagging and will be surveyed using either global positioning system (GPS) or conventional civil survey techniques, as necessary to obtain the required level of accuracy. Horizontal coordinates will be referenced to the Alabama State Plane Coordinate System, 1983 North American Datum (NAD83). Elevations will be referenced to the National Geodetic Vertical Datum of 1929 or the North American Vertical Datum of 1988 (soon to be established on site).

Temporary wells will be surveyed to an accuracy of 0.1 foot for horizontal coordinates and 0.01 feet for elevations, using survey-grade GPS techniques and/or conventional civil survey techniques, as required. Permanent monitor well locations will be surveyed by a registered professional land surveyor to provide the required accuracy of 0.1 foot for horizontal coordinates and 0.01 foot for elevations.

Procedures to be used for GPS surveying are described in Section 4.3 of the SAP. Conventional land survey requirements are presented in Section 4.19 of the SAP.

4.5 Decontamination Requirements

Decontamination will be performed on sampling and nonsampling equipment to prevent cross-contamination between sampling locations. Decontamination of sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.1 of the SAP. Decontamination of non-sampling equipment will be performed in accordance with the requirements presented in Section 4.10.1.2 of the SAP.

4.6 Analytical Program

Samples collected at locations specified in Chapter 4.0 will be analyzed for specific suites of chemicals and elements based on the history of site usage, as well as the EPA, ADEM, FTMC, and USACE requirements. Target analyses for samples collected at the Fill Area Northwest of Reilly Airfield, Parcel 229(7), include the following list of analytical suites:

- TCL VOCs - Method 5035/8260B
- TCL SVOCs - Method 8270C
- TAL Metals - Method 6010B/7000
- Chlorinated Pesticides - Method 8081A
- PCBs - Method 8082
- Organophosphorus Pesticides - Method 8141A
- Chlorinated Herbicides - Method 8151A
- Nitroexplosives - Method 8330
- Total organic carbon - Method 9060 (sediment only)
- Grain size - American Society for Testing and Materials D421/D422 (sediment only).

The samples will be analyzed using EPA SW-846 methods, including Update III Methods where applicable, as presented in Table 4-5 in this SFSP and Table 6-1 in the QAP. Data will be reported and evaluated in accordance with CESAS Level B criteria (USACE, 1994) and the stipulated requirements for the generation of definitive data (Section 3.1.2 of the QAP). Chemical data will be reported via hard copy data packages by the laboratory using CLP-like

Table 4-5

Analytical Samples - Fill Area Northwest of Reilly Airfield, Parcel 229(7)
Fort McClellan, Calhoun County, Alabama

Parameters	Analysis Method	Sample Matrix	TAT Needed	Field Samples: No. of Sample Points	Field Samples: No. of Events	Field Samples: No. of Field Samples	QA/QC Samples[a]: Field Dups (10%)	QA/QC Samples[a]: Splits w/ QA Lab (5%)	QA/QC Samples[a]: MS/MSD (5%)	QA/QC Samples[a]: Trip Blank (1/ship)	QA/QC Samples[a]: Eq. Rinse (1/wk/matrix)	Quanterra: Total No. Analysis	QA Lab: Total No. Analysis
Fill Area Northwest of Reilly Airfield, Parcel 229(7): 8 water matrix: 5 groundwater, 3 surface water; **18 soil matrix:** 6 surface, 7 subsurface, 3 sediment, 2 depositional													
TCL VOCs	8260B	water	normal	8	1	8	1	1	1	1	1	13	1
TCL SVOCs	8270C	water	normal	8	1	8	1	1	1		1	12	1
Cl Pesticides	8081A	water	normal	8	1	8	1	1	1		1	12	1
PCBs	8082	water	normal	8	1	8	1	1	1		1	12	1
OP Pesticides	8141A	water	normal	8	1	8	1	1	1		1	12	1
Cl Herbicides	8151A	water	normal	8	1	8	1	1	1		1	12	1
Tot TAL Metals	6010B/7000	water	normal	8	1	8	1	1	1		1	12	1
N. Explosives	8330	water	normal	8	1	8	1	1	1		1	12	1
TCL VOCs	8260B	soil	normal	18	1	18	1	1	1		1	22	1
TCL SVOCs	8270C	soil	normal	18	1	18	1	1	1		1	22	1
Cl Pesticides	8081A	soil	normal	18	1	18	1	1	1		1	22	1
PCBs	8082	soil	normal	18	1	18	1	1	1		1	22	1
OP Pesticides	8141A	soil	normal	18	1	18	1	1	1		1	22	1
Cl Herbicides	8151A	soil	normal	18	1	18	1	1	1		1	22	1
TAL Metals	6010B/7000	soil	normal	18	1	18	1	1	1		1	22	1
N. Explosives	8330	soil	normal	18	1	18	1	1	1		1	22	1
Tot Org Carb	9060	sediment	normal	3	1	3						1	0
Grain Size	ASTM	sediment	normal	3	1	3						1	0
Fill Area Northwest of Reilly Air Field Subtotal:				214			16	16	16	1	16	275	16

[a]Field duplicate, QA split, and MS/MSD samples were calculated as a percentage of the field samples collected per site and were rounded to the nearest whole number. Trip blank samples will be collected in association with water matrix samples for VOC analysis only. Assumed four field samples per day to estimate trip blanks. Equipment blanks will be collected once per event whenever sampling equipment is field decontaminated and re-used. They will be repeated weekly for sampling events that are anticipated to last more than 1 week. Assumed 20 field samples will be collected per week to estimate number of equipment blanks.

Cl - Chlorinated.
MS/MSD - Matrix spike/matrix spike duplicate.
OP - Organophosphorus.
PCB - Polychlorinated biphenyl.
QA/QC - Quality assurance/quality control.
SVOC - Semivolatile organic compound.
TAL - Target analyte list.
TCL - Target compound list.
USACE - U.S. Army Corps of Engineers.
VOC - Volatile organic compound.

forms. These packages will be validated in accordance with EPA National Functional Guidelines by Level III criteria.

4.7 Sample Preservation, Packaging, and Shipping

Sample preservation, packaging, and shipping will follow requirements specified in Section 4.13.2 of the SAP (IT, 1998a).

Completed analysis request/chain-of-custody records will be secured and included with each shipment of coolers to:

Sample Receiving
Quanterra Environmental Services
5815 Middlebrook Pike
Knoxville, Tennessee 37921
Telephone: (423) 588-6401.

Field split samples will be shipped to:

Sample Receiving
Attn: USACE South Atlantic Division Laboratory
611 South Cobb Drive
Marietta, Georgia 30060
Telephone: (770) 919-5270.

4.8 Investigation-Derived Waste Management and Disposal

(IDW) will be managed and disposed of as outlined in Appendix D of the SAP. The IDW expected to be generated from the field sampling at FTMC will consist of purge water from temporary well development and sampling activities, decontamination fluids, spent well materials, and personal protective equipment (PPE). IDW will be stored at the fenced area surrounding Buildings 335 and 336 while awaiting final disposal.

4.9 Site-Specific Safety and Health

Safety and health requirements for this SI are provided in the SSHP for the Fill Area Northwest of Reilly Airfield, Parcel 229(7). The SSHP attachment will be used in conjunction with the SHP.

5.0 Project Schedule

The project schedule for the SI activities will be provided by the IT project manager to the Base Realignment and Closure Cleanup Team on a monthly basis.

6.0 References

Environmental Science and Engineering, Inc. (ESE), 1998, ***Final Environmental Baseline Survey, Fort McClellan, Alabama***, prepared for U.S. Army Environmental Center, Aberdeen Proving Ground, Maryland, January.

Fort McClellan (FTMC), 1997, ***Fort McClellan Comprehensive Reuse Plan***, prepared under contract to the Calhoun County Commission, November.

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